THE

VETERINARY JOURNAL

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SEPTEMBER, 1917.

Editorials.

THE RAVAGES OF WAR AND "TRUTH."

WAR has made terrible ravages amongst animals; and horses, in their turn, have suffered equally with men in this ghastly struggle. Attention to this has been drawn many times, but never quite so pointedly as in the above-named weekly periodical during the last few issues.

War is never a drawing-room game, and under the best of conditions there must of necessity be a great many losses. It is easy to sit in an armchair and write lengthy paragraphs to say that this or that should not have occurred. To those who know the terrible conditions under which our animals were compelled to exist during the past two winters the wonder is that any of them escaped, and it was only due to almost super-human efforts on the part of those who looked after them that they did not all perish.

A horse is not a light article, and the fact that his body is supported on four pinnacles, and has to stand upon them night and day incessantly does not improve the foundation upon which he must necessarily be placed. Conditions for men are bad enough where mud (and this is *real* mud to which allusion is made) is in question, but a man is at all events able to get on dry land occasionally, whereas the horse, during the wet season, practically never gets a chance for weeks at a time. Add to that the necessarily continual movements, especially in the regions under shell fire; the diseases which accompany mud and wet and miserable surroundings; internal disorders owing to variations in the quality, character, and quantity of food; the attacks of external parasites, such as mange, lice, and such like, and internal

parasites, such as the ***strongylus tetracanthus;*** exposure to shell, bomb, or gun fire; and a thousand and one other things which the arm-chair critic knows nothing about.

To criticise upon mere figures or statistics is unjust, especially as it is a notable fact that the proportion of actual sickness is scarcely any in excess of that when large numbers of horses are collected together during times of peace.

Let the man who criticises put up a remedy and he will have done a real service to his country. Everyone wishes to do better, none more so than the officers and men of the Army Veterinary Corps, and every day some new benefit is discovered and put into practice; neither are we too proud to learn from laymen. It is certainly very unfair to blame them for the results of the conditions under which they are compelled to work, unless the critic can prove errors of judgment or administration; and had the conclusions drawn half a foundation of fact the British taxpayer might rest assured that an enquiry would not only be justifiable but urgently necessary. The reply to questions on the subject, given by Mr. Macpherson, M.P., in the House of Commons, puts the whole thing concisely in a nutshell, and if our critic can show how to avoid or remedy one third of the exigencies therein dealt with, he will have become a public benefactor and have earned the gratitude of everybody on the Allied side.

Criticisms are wise and necessary, but in a crisis like this let them be "constructive," and not "destructive."

ILLUSTRATIONS AS AN AID TO DIAGNOSIS.

To most men, in the words of a well-known advertisement, "every picture tells a story," and a good picture of the lesions produced by a disease makes much more of a lasting impression, and gives a clearer idea than volumes of dry description; the only thing to beat it being a sight of the actual lesion itself.

In advocating practical illustrations of surgical methods at our veterinary meetings, and in producing illustrations upon every possible opportunity as aids to knowledge, the VETERINARY JOURNAL has ever been to the fore, and this month's number is more than usually well supplied. The article on Ulcerative Cellulitis is an especially good example, and gives at a glance the characteristic clinical appearances of this disease in such a manner that the professional mind cannot fail to recognise it at once.

Illustrative articles from our contributors are always welcome, and if of a suitable nature can always be promised a place of prominence in the columns of the JOURNAL.

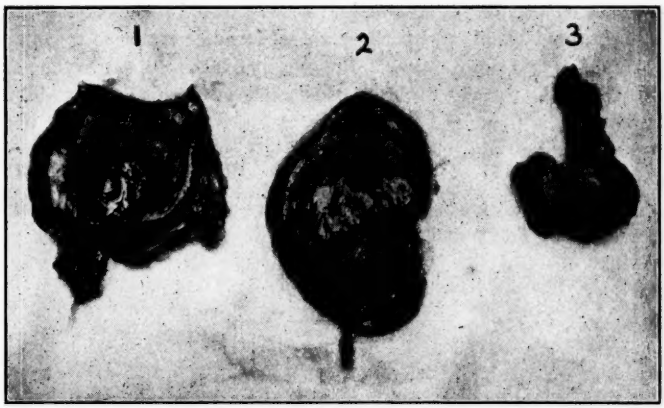
Original Communications.

AN INTERESTING OVARIOTOMY OF A TROUBLESOME MARE.

By CAPTAIN GUY SUTTON, F.R.C.V.S.
Army Veterinary Corps.

A TROOPER mare, about 15 hands high, 6 years old, was sent from remounts for ovariotomy, being unmanageable.

I have done over a score for similar reasons, and they have all been subsequently issued. I always use the stocks now, which makes the operation ten times simpler than when they are cast. They



Ruptured Ovary of Mare Discovered during Spaying.
1. Left Ovary Ruptured. 2. Blood Clot. 3. Right Ovary.

are chloroformed as they stand, and do not require a degree of anæsthesia which deprives them of the support of their legs. The latter are shackled to the posts. The external area is washed with soap, and no internal douching is carried out, as I consider this unnecessary and perhaps harmful. The rectum is emptied early in the proceeding. A dose of arecoline is given midway during the 48 hours' fasting prior to the operation.

The photograph shows all the curious conditions presented by the left ovary in this particular case.

The right ovary was normal and was removed. When I felt for the left one, I discovered a large spherical mass, and whilst grasping

this in an endeavour to ascertain its character, I felt a portion come slowly away in my hand. I was completely mystified and drew out what appeared to be a blood clot, spherical, and with about a fourth of its bulk fibrinous, the remaining portion being the colour of ox liver. For the moment I wondered whether it was an ovarian pregnancy. I now explored again and found in place of the normal ovary a flat palmate body at the ovarian site. As I could not think of it being anything but ovarian tissue, I removed it, and found it to be the left ovary completely ruptured throughout the length of its greater curvature, and having the appearance of a split kidney. The blood clot had been enclosed by the two split hemispheres, and a shred of stretched and separated peritoneum. I surmise that the ovary was acutely congested, and that the arecoline was the immediate cause of the rupture.

It is conceivable that complete healing would have taken place in this ruptured gland, and perhaps the occurrence is not so uncommon as might at first sight appear. Frequently ovaries appear to the naked eye to consist largely of scar tissue. Those of this subject did not appear to be abnormal in structure, but the discovery of a partly ruptured ovary during ovariotomy is, I think, an unique surgical experience.

The weights were: Right ovary, 3 ozs.; left ovary, 6 ozs.; blood clot, 9 ozs. The patient made an excellent recovery and returned to duty.

ULCERATIVE CELLULITIS.

THE illustrations of this disease which are here depicted were made by Lance-Corporal Noble, A.V.C., from specimens met with by Captain G. G. Pook, A.V.C., at one of the large hospitals of the Army Veterinary Corps in France. They are most expressive and characteristically true in every detail. Very little letterpress is necessary to enable the professionally trained veterinarian to recognise the disease at a glance.—(EDITOR *V.J.*)

PLATE No. 1.—Illustrates severe and typical cases affecting both the hind and fore leg.

Nos. 1 and 2 are two views of the same leg, a side and back view, which illustrate the extent to which the disease may develop. If a cure is effected in a case of this kind the leg will invariably remain thickened, and on examination the resulting cicatricial tissue of the previous ulcers will be found. This is important, as it helps one to determine if a horse has had a previous attack of the disease.

Nos. 3 and 4 are different cases, and it will be noticed that the affection extends up to the hock.

No. 5 illustrates a case of the front limbs. It is worthy of note that the fore limbs as observed here rarely become affected higher than this illustration. An isolated case or so has been noticed to extend to the knee, however. No. 5 was under treatment for seven weeks and has since been sent away fit. He was under observation for three weeks after the healing of the ulcers, and showed no signs of the recurrence of the disease.

PLATE No. 2 illustrates a case in which the disease is entirely confined to the fetlock as regards ulcers; from the hock down the leg is observed to be swollen. Two views are given to illustrate permanent thickness of leg.

PLATE No. 3 illustrates a slight case affecting both hind legs. The primary ulcer appeared on the near hock; a bulla is noticed directly under the healed lesion. Slight cases of this kind usually do well and leave no thickening of the leg.

PLATE No. 4 was made to illustrate the extent the deformity may reach in a leg during the course of the disease.

PLATE No. 5 illustrates a case in which there is one ulcer present on the leg, and yet the leg has never become swollen. Two large abscesses will be noted on the back, and two smaller ones about the size of a hazel nut, just above the gastrocnemius muscle. The rings on the various parts of the plate illustrate the favourite sites of abscess formations in this disease, notably the neck, shoulder, loin, hip joint and inguinal region.

PLATE No. 6 is illustrative of an affected leg where a number of small ulcers have coalesced, leaving two deep irregular wounds. A large abscess formation is noted at the posterior extremity of the ischium, and it is worthy of note that the original abscess formation was on the other limb.

PLATE No. 7, made at the time of a *post-mortem* examination, illustrates the number of ulcers that may occur during the course of the disease. Nodules are noted extending well up into the internal aspect of the thigh and inguinal region, and small abscess formation in the mammary gland. On microscopical examination and cultures made of the contents of the nodes it revealed the streptothrix, and not organism of ulcerative cellulitis. There were no signs of internal affection in this horse.

PLATE No. 8 is typical of a case in which one finds an abscess formation in the inguinal region and very little affection in the leg, as invariably is the case. When abscesses appear on the body it does not necessarily follow that the legs are affected. This illustration was made on *post-mortem* examination.

PLATE No. 9 illustrates a case of many ulcerous formations both inside and outside of same leg, and the formation of nodules well up the leg. A culture and microscopical examination was made of these nodules, which revealed the Priesz-Nocard organism of ulcerative cellulitis.

PLATE No. 10 illustrates a severe case in which the hock joint has become involved. The sketch was made when the swelling of the hock was at its height; the day following the abscess formation on the internal aspect of the joint burst, from which a copious bloody discharge flowed.

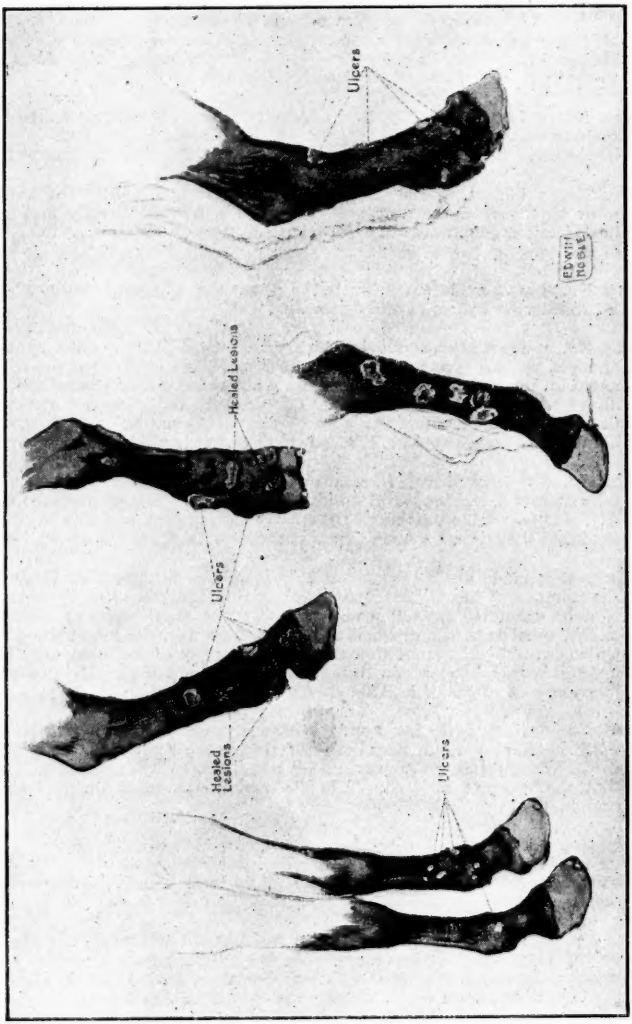


PLATE No. I.

PLATE No. 2.

PLATE No. 3.

PLATE No. 4. Officer's Charger.

PLATE No. 5.

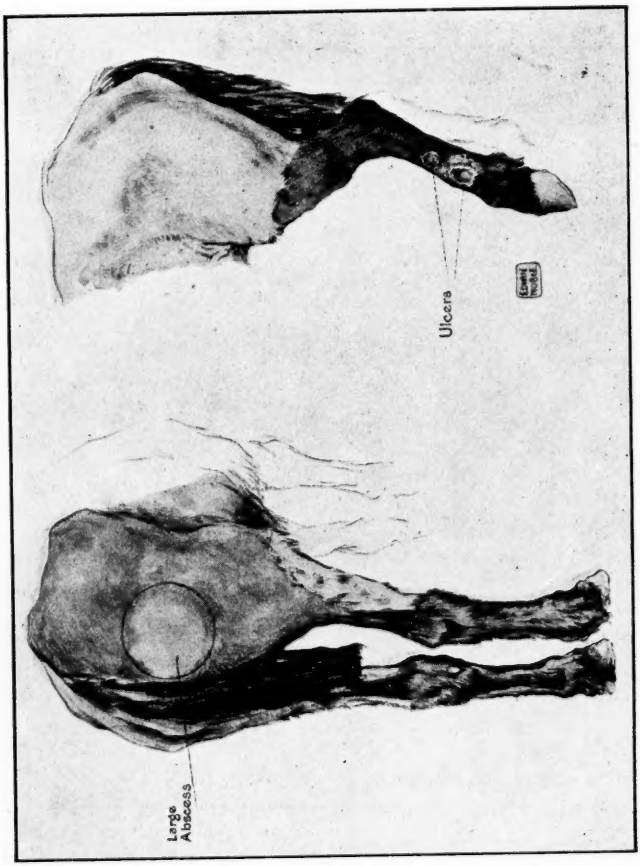


PLATE No. 6.

PLATE No. 7.

PLATE No. 8.

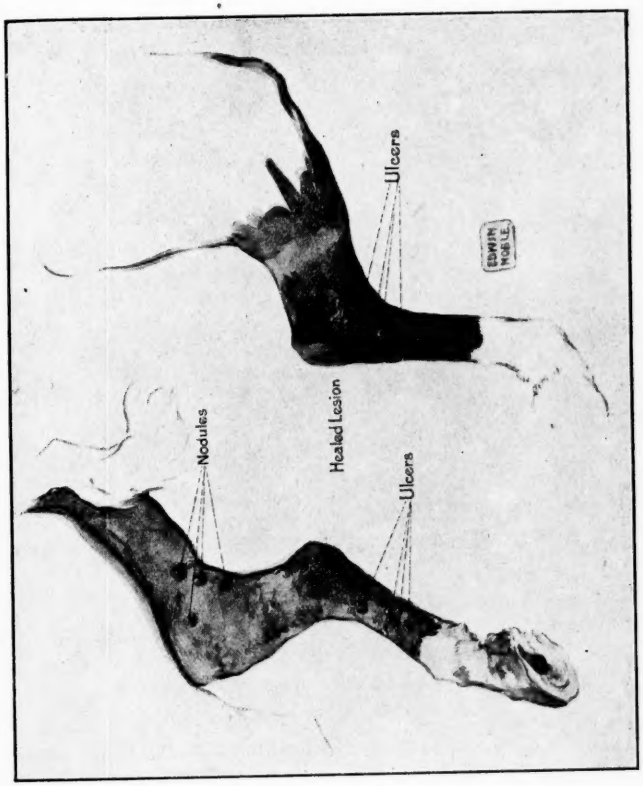


PLATE No. 9.

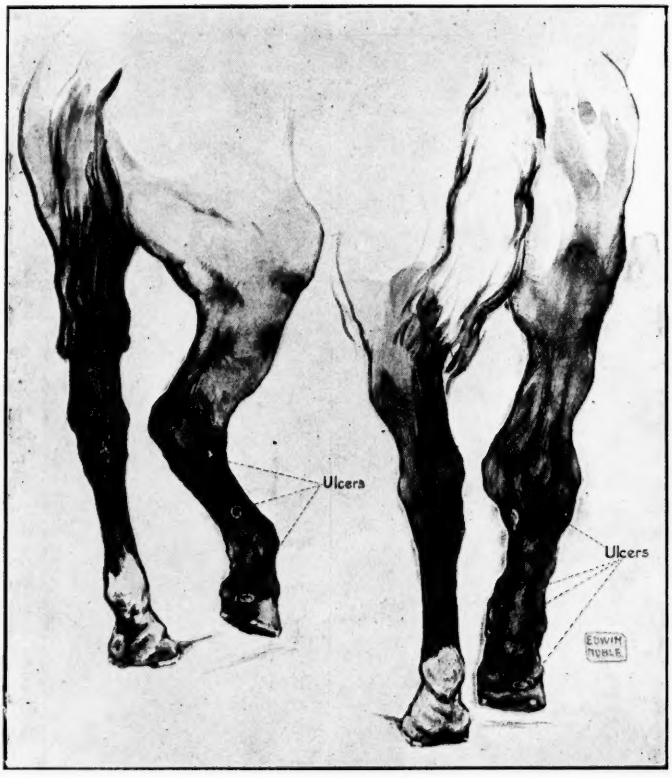


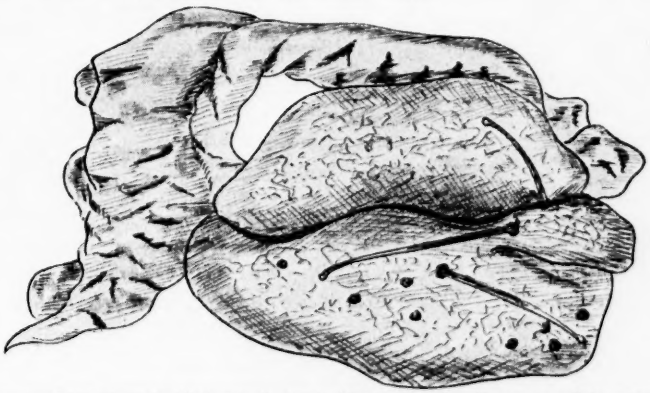
PLATE No. 10. Two views of the same leg.

THE PRESENCE OF *STRONGYLUS ARMATUS* IN THE TESTICLE OF CRYPTORCHIDS.

By MAJOR F. HOBDAY, F.R.C.V.S., F.R.S.E.,
Army Veterinary Corps.

In the Veterinary Journal for the month of July, 1915, I drew attention to the presence of the *Strongylus armatus* worms in the substance of the testicle of the horse, stating that they were found fairly frequently in the normal castrations, but that they were rarely met with in abdominally placed testicles. I am inclined now to somewhat modify that opinion, as I have met with eleven cases in cryptorchids within the past two years, and recently came across three cases within a week.

All were true abdominal cases of retention of the testicle, some on the right side and some on the left, and the specimen here sketched had no less than three complete worms in its interior, each in a little nest in the substance of the testicular tissue.



Cryptorchids Testicle (abdominal, right side) containing three complete worms (*Strongylus armatus*).

The patient was a bay rider, about 13 or 14 years old, 15 hands high, and was sent to hospital for some ophthalmic trouble. No mention was made that the animal was a "rig," and it was only when he broke away at the water trough and attempted to "serve" a mare that the sex was discovered.

Upon being cast and chloroformed, two scars were plainly visible and each side was incised. In the left canal the cord was present, but on entering the abdomen on the right side, the testicle illustrated in the sketch was discovered. Upon being cut open, three perfect specimens of the *Strongylus armatus* were discovered.

For the sketch, I am indebted to Staff-Sergeant Weyman, A.V.C

The animal made a good recovery.

A PECULIAR CASE OF "TEMPORARY PARALYSIS (?) OF THE NECK MUSCLES" IN A HORSE.

By Captain C. H. S. TOWNSEND, M.C.
Army Veterinary Corps.

Subject.—A bay charger mare, 9 years old.

Previous History.—Had been in France since the beginning of the War, and never had any illness.

Symptoms.—I was called to the case at 10 p.m., and found the mare with her head down between the fore legs, the nose resting on the ground. She was in no pain, and would eat grass off the ground. Pulse, respiration, and temperature were quite normal. The head could be lifted up to its normal position, but at once dropped to the ground when it was let go. There were no signs or history of any injury—the animal was seen at 8.30, when it was quite normal; and again at 8.45, when these symptoms were first noticed.

Diagnosis.—None made. Suggested that it might be due to an injury to a nerve, or possibly the spinal cord, but could say nothing definite.

Treatment.—No medicine was given that night. All food was withheld except a bran mash.

After-treatment and Result.—Next day the mare was lying down and still unable to raise its head. The head was swollen, chiefly along the cheeks; this I had expected, and put down to œdema due to the position of the head interfering with the circulation in the head and neck. Temperature, 103·8; pulse, full and rapid; respiration, blowing; bowels, normal. The animal was not eating so well as on the previous day. I was still unable to account for these symptoms, and thought the case had taken an unfavourable turn. I administered ℥iv Aloes, but for no definite reason.

On seeing the mare the following day, I was surprised to find her standing quite normally, head erect, and respiration and temperature normal. The swelling on the head still remained, but was not so large as on the previous day.

No further treatment was adopted, the swelling of the head disappeared, and in three or four days the animal had made an uneventful recovery.

AN INTERESTING PATIENT.

By Captain J. MALCOLM ARMFIELD, A.V.C.

I have known the subject of this report for nearly three years, and during that time he has provided me with material for much thought. He is a bay gelding, twelve years old, presumably salted, and the property of the district medical officer, with whom I share stables.

Before he became the property of the present owner, he was very lame in one of his fore legs. There was a small nodular swelling on the fetlock, and, suspecting the presence of a thorn, or grass seed, I had him poulticed. This produced no result; therefore, he was chloroformed standing, cast, and the nodule opened, unsuccessful search being made for a foreign body. However, in a few weeks he was sound again, and I remember no more trouble until he arrived at this station.

His next disease was ophthalmia, one eye being much worse than the other. At the height of the attack, a blue film completely covered one iris, causing total blindness of the eye. Perchloride of mercury (1—1,000), together with purgative medicine, cured the eyes, although a small streak of grey still remains in one corner. Once or twice since ophthalmia has returned, but it has always yielded fairly readily to simple treatment.

About a year ago, ugly-looking ulcers appeared on the inside of his thighs; at the same time his sheath became considerably swollen. There is epizootic lymphangitis in the district, but smears from the ulcers proved negative. Finally, the animal was cast and the sheath lacerated in two or three places. This seemed to bring relief, as he recovered and returned to work shortly afterwards.

With the exception of an attack of colic, he remained in health for about nine months, but at the time of writing he is just recovering from another similar indisposition. It appeared to originate from a cracked heel on the off hind limb. Very persistent lymphangitis, not yielding to the usual treatment, followed in this limb.

Again ulcers appeared on the thighs, also on the under surface of the tail, and on the penis, the latter organ becoming painfully swollen, the ulcers upon it exuding a clear straw-coloured fluid. Microscopic examination for Rivolta's cryptococcus in smears from all places proved negative. In front of the penis, on each side of the abdomen, swellings appeared, extending forwards for about 18 inches, and raised from the skin to an extent of about 2 inches. An extensive skin eruption now added to the poor creature's sufferings. Small tufts of hair became raised; when they were pulled off they were found to be composed of a grey substance, easily reduced to powder between the finger and thumb. The animal became very emaciated, and, as the owner and myself were frequently away for days at a time, destruction was discussed. However, we decided to give him a chance, and simple remedies, combined with desultory nursing, have now brought him into a fair state of health.

This district harbours large numbers of ticks, of every variety, and it is possible that they have been the sole cause of the swellings

and ulcers. I have seen several equines with similar enlarged sheaths and ulcers, apparently due to poisoning with ticks. But exactly what my patient has had, or has not had, I am unable to say. I am now awaiting anxiously for his next attack, for a mutual companionship has sprung up between us, and I should be truly sorry to lose such an interesting pathological specimen.

A METHOD OF DEALING WITH PUNCTURED AND SUPPURATING EYEBALLS.

By Captain A. R. ROUTLEDGE,
Army Veterinary Corps.

The patient is cast, chloroformed, and cocaine used as a local anæsthetic. Under the usual antiseptic precautions the cornea is punctured and excised with a circular incision following the sclero-corneal junction. As, after the operation, the eyeball is smaller it is advisable to excise a portion of the membrana nictitans. If left intact it bulges, is exposed to the air, and a chronic purulent discharge from the eye results. The operation wounds heal in from fourteen to twenty-one days.

Advantages claimed: The eye heals rapidly, has a very natural appearance, doing away with the unsightly cavernous look usual when total extirpation has been practised. Chronic discharge rarely follows, therefore annoyance from flies, etc., is avoided. Very occasionally it has been found that owing to the shrinkage of the eyeball the upper eyelid becomes inverted. The usual *entropion* operation, as performed on the dog, puts matters right. A large ellipse of skin should be excised, carrying the operation wound well forward on the upper eyelid. Operation on the lower lid is of no benefit and is not advised.

SPASM OF DIAPHRAGM IN A PONY.

By J. PATON, F.R.C.V.S.,
Stevenage.

On May 29th I attended an aged pony about 14 hands for stoppage of the bowels, accompanied with fairly acute inflammation. Next morning I was informed by telephone that the pony was better, so that I need not call again. On the afternoon of the same day, a second telephone message came through, stating that "the pony, after drinking a small quantity of chilled water, was ill again, and you could hear his heart beating thirty yards off." When I saw him shortly after, he was standing, and showing great distress. By laying the palm of the hand over the region of the diaphragm, one could feel the powerful contractions of this muscle, running about

45 to the minute. The hollow, drum-like beat could easily be heard thirty yards off. Every spasm sent a certain amount of air rushing through the dilated nostrils with a sound like the puff of a miniature steam engine. It was impossible to take the pulse or hear the heart beat. The mucous membranes were deeply injected. There was no inclination on the part of the animal to eat or drink. I saw it again next day. There was very little change, the regular beat of the diaphragm going on just the same, perhaps hardly so forcible. Strong doses of chloral hydrate were administered without apparently any effect. I should have liked to see the effect of the administration of chloroform, but the owner made up his mind to have it destroyed. I was unable to get a *post-mortem*.

"TIPS" ON CAMELS, FOR VETERINARY SURGEONS ON ACTIVE SERVICE.*

By A. S. LEESE, M.R.C.V.S.

(*Concluded.*)

Treatment: Considerable judgment is necessary as to the best thing to do for every case. When the camel does not appear to be incommoded, and has a free nasal discharge, and the state of the frontal sinuses can only be indicated by percussion or by exploratory perforation, I find that some camels recover spontaneously, the adventitious orifice through which the pus gains the nasal chamber allowing of sufficient drainage in these cases.

If the camel is in pain, or when swelling of the bone or perforations are seen on the face, the sinus should be trephined. The sinus occupies a very similar position to that of the horse, but to make a neat job so as not to damage the supra-orbital canal and its vessels, and to obtain the best drainage, I prefer to use a small trephine and to let its circumference touch two imaginary lines, viz., one joining the nasal canthi, and one parallel with the long axis of the head and ½ inch from the edge of the orbit. After-treatment consists in flushing twice daily with solution of pot. permang.; when doing this, the nose must be depressed and the head tilted sideways until the solution runs out of the nostrils. Sometimes it is necessary to break down the secondary partitions which subdivide the frontal sinus, to get at the diseased part. It is not uncommon to find the eye on the affected side amaurotic; and my experience is that the camel never regains the sight of the affected eye in such cases.

3. *Fracture of the Lower Jaw.*—This occurs when fighting, and the

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* For previous instalments, see page 79 (March), page 136 (April), page 167 (May), page 214 (June), page 259 (July), and page 294 (August).

fracture is nearly always transverse, and through one or both tush sockets (the weakest part of the lower jaw). Treatment for this fracture gives good results if adopted early. When suppuration has already begun, the case is apt to be tedious. The best treatment is to notch two teeth on each side of the jaw, one in front of and one behind the fracture, with a sharp file and near the gum, just sufficiently to allow a string to grip on the notch, and then, having the broken part of the jaw supported in its proper position, bind the notched teeth of each side with string in such a way as to maintain it there. The camel can pick up his own food if placed in front of him, but of course must not be sent out to graze until the bone has "set," say for four weeks. The string should be examined twice daily, and changed and tightened whenever the fractured piece is in the least inclined to sag. Care should be taken that, when the bone is "setting," in the second week particularly, the jaw is trained into its place perfectly straight in both planes to prevent subsequent trouble with the teeth. In East Africa I managed to get a camel fit for active service within five weeks after this fracture and another veterinary surgeon could find no trace of the fracture. If the camel is sent out to graze too soon, the strain on his jaw will undo the work of three weeks. String is preferred for supporting the jaw because it is more easily altered and manipulated than wire. As to the teeth around which the supporting strings are adjusted, the one in front of the fracture is always an incisor, but the one behind the fracture may be tush or wolf's tooth. Sometimes one tush is so loosened by the original injury as to need extraction. The chief thing is to prevent the camel from stripping leaves from trees and branches until the jaw is firmly set by bony union.

4. *Suppuration in External Auditory Meatus.*—Although I have frequently met with this disease, I am ignorant of its cause. The pus comes from a depth which makes exploration impossible. I generally have these cases syringed with Pot. permang. until the pus becomes thin and scanty, after which I stuff the meatus with boric acid. My own experience is that this disease results in recovery in the long run, but may take months. Probably a small foreign body is the causal factor in many cases, but this is a guess.

Surgical Diseases of Neck and Trunk.

Camels sometimes *fracture* their *vertebræ* by falls. The "*wry-neck*" which is seen in certain diseases is only a symptom, the cause of which was explained under "Cold-struck." *Enlarged thyroid glands* are met with sometimes, but, in adults, are of no clinical importance. *Saddle galls* are treated as in other animals, but are often over-dressed by dressers. Sore withers sometimes need the sawing off of the tops of the superior spinal processes; sore loins may require a similar removal

of the ends of lumbar transverse processes. There is plenty of room for good surgery in treating sore withers; but necrosed soft tissues are often better torn out than cut out. The cartilage of prolongation of the scapula is more easily underrun than in the horse, owing to its position, and when that happens the case is generally incurable. In some districts, sore withers have to be protected by a leather shield to prevent them being torn open by the branches of thorny trees on the grazing ground; and, in some parts, a crow's feather must be tied to the hair near the sore. Vaseline with a little turpentine mixed in it is my favourite application against flies and for encouraging the skin to grow from the edges of saddle-sores.

Fractured ribs.—The normal number of pairs of ribs in camels is twelve; but I have several times found a thirteenth pair, very rudimentary, and never attached at their upper ends to the first lumbar vertebra.

Fractured rib is common in camels from blows and may be multiple, and of any degree of severity up to penetration of the lung. The treatment is the same as in ordinary veterinary practice; but as, when the camel is sitting, the rib is a weight-bearing bone, it is very important never to tie camels down which have this fracture.

Sublumbar abscess has been met with, causing emaciation, low fever, and difficulty in barracking and in rising. I do not know the cause.

Diseases of the Pedestal.

The pedestal is composed of the following structures:—

(*a*) the Horny pedestal, or outer layer of horn.

(*b*) the Sensitive pedestal, or secreting membrane.

(*c*) the Fibro-cartilaginous pedestal, or Base.

(*d*) the Sternal Boss, the part of the Sternum which is the "foundation" of the Pedestal, and which is, of course, bone.

Cracks in the horny pedestal, which is only about $\frac{1}{4}$ inch thick, are caused by sitting in pools of water in rainy weather. Sometimes there is some irritation of the sensitive pedestal beneath it, due to the entry of sand or gravel into the cracks. Treatment consists in the removal of grit, the application of Stockholm tar to the cracks, and protecting the organ by sacking slung from the back. Bruises of the pedestal are due to sitting down on sharp stones, particularly in camels imported into stony country from a sandy desert, and which have soft horn; or to barracking when heavily loaded and weakened by disease or privation, and so coming down "hard." If the bruise is near the edge of the pedestal, any suppuration arising in the sensitive pedestal will find its way out between hair and horn before much damage is done. But if the bruise is central, and suppuration under the horny pedestal occurs there, the pus cannot easily escape; it may burrow between

the sensitive and horny layers, and, when it does, the burrowing is always towards the posterior edge, where it eventually finds exit; but sometimes, before the pressure is thus relieved, the fibro-cartilaginous base may become infected, and then the case becomes serious. Abscesses may then form in the base and break out at the sides of the pedestal through the skin; or enormous enlargement of the posterior half of the base may occur from the formation of a mass of new fibrous tissue around a small abscess; or the sternum itself may become involved, with suppurative ostitis. In all degrees of injury of the pedestal from bruising, the principles of treatment are the same—to rest the part (*i.e.* relieve it from its function of weight-bearing), to give exit to pus, to get drainage, and to remove necrosed tissue. Suppuration of the sensitive pedestal near the edge can generally be dealt with by evacuating it between hair and horn. Pus forming under the centre of the horny pedestal must be removed by cutting through the latter. Abscesses in the deeper layers of the pedestal require a bold and thorough operation for removal of all diseased fibro-cartilage or bone, but it is only worth undertaking when the patient is in good condition. I prefer to trephine from below in the centre of the pad (and again, from one side, in some cases), so as to get freely at the parts with a curette. The enormous enlargement by new fibrous tissue which sometimes occurs is treated by operation; the posterior enlarged part is sawn off obliquely, preserving as much of the anterior part as is normal and not involved. The hæmorrhage is great and can be controlled best by sawing a little at a time; the capillary bleeding is stopped with a flat firing-iron. The great wound which remains should be covered with a thick layer of tow, and over that an old cushion should be secured, the whole application being supported by bands over the back. It is surprising how little discomfort the camel shows; indeed he is undoubtedly relieved, since the operation exposes and evacuates the causal abscesses. All serious operations on the pedestal call for chloroform; niggling surgery is quite useless. In all degrees of pedestal injury, the camel must never be tied down in the sitting position. I have tried several kinds of appliances for taking the weight off the diseased pad when sitting, but they are not very satisfactory. There is, however, nothing to prevent camels with this disease being put into slings if the latter and a suitable tree are available; the object of the slings is to prevent barracking.

Lameness and Surgical Diseases of the Limbs.

In the camel, lameness is a much more simple subject than in equine practice, provided one knows the diseases he is liable to. In addition to the ordinary means of diagnosis, one can obtain further information on a case by carefully watching him whilst he is in the act

of barracking and of rising, when any painful joint will be strongly "favoured." Foot-lameness in the camel is generally made obvious by swelling; there are practically no internal diseases of the foot except penetration by thorns. Shoulder and hip lameness are extremely common in camels. It is very seldom that one need handle the limb below knee or hock. If one desires to lift a forefoot, say the near fore-foot, the left hand is placed over the triceps region, and then, by bending down and catching the cannon with the right hand and simultaneously throwing one's weight on the left hand, the foot will come up. The hind-feet are not easily handled unless the camel is roped fore and aft and rolled on to his side.

Veterinary surgeons ought to know that the upper parts of the camel's limbs are covered by a layer of yellow elastic fibrous tissue so arranged subcutaneously as to take much of the strain off the muscles during progression. The action of this elastic tissue is easily demonstrated when, in a camel lying prostrate with a fore-leg extended, one bends the fetlock joint: the foot will fly up and strike the chest. It is the possession of this layer of tissue which makes the camel so tireless, although he has comparatively poor muscular development.

Two other anatomical characters, at least, must be noticed by clinicians. One is the "double-jointed" hock, in which the joint formed between the astragalus and calcis on the one hand, and the cuboid and scaphoid on the other is ginglymoid, and not a gliding joint, this arrangement making it possible for the camel to flex his hock until the tibia and metatarsus come into line. The other point is the existence of an elastic pad of yellow fibrous tissue below each digit in the foot, which prevents "jar," and so saves the camel from most of the lamenesses due to concussion.

Injuries to the limb-pads, which exist at the elbow, knee, stifle, and outside of hock, are dealt with in a similar way to injuries of the pedestal, and need not again be mentioned.

Surgical Diseases of the Fore-limb.

The characteristic camel-lamenesses of the fore-limb are as follows:—

1. Fracture of acromion process of scapula.
2. Fracture of rim of glenoid cavity of scapula.
3. Rheumatism of the shoulder.
4. Sprain of the tendons binding the shoulder-joint.
5. Dislocation of the shoulder-joint.
6. Abscess of prepectoral lymph-glands.
7. Fractured humerus.
8. Brushing between foreleg and body (three varieties.)
9. Fracture of radius.

10. Chronic strain of knee and fetlock joints in young camels, resulting in permanent knock-knees and " bandy " fetlocks.
11. Fractured metacarpus.
12. Exostoses of metacarpus (rare).
13. Sprain of flexor tendons (tendinitis and synovitis)
14. Rheumatism of flexor tendons (rare).
15. Brushing (fetlock or foot).
16. Open sesamoideal sheath (from bites).
17. Fractured os suffraginis.
18. Foot-soreness and bruised sole.
19. Punctured wounds of foot.
20. Whitlow.

1. *Fracture of Acromion Process of Scapula.*—In camels, the acromion process is a finger-like projection, pointing, as it were, to the shoulder-joint. It is sometimes broken off by a camel colliding against a tree or falling. The fracture causes dead lameness, although a little weight can be placed on the limb, and a swelling over the shoulder region above the joint. The swelling is not half that noted in dislocation of the joint. The treatment is removal of all loose and necrosed bone by operation ; and this results in complete cure, provided the operation is thorough and not " niggling " ; chloroform should be used to ensure thorough searching. The loose pieces are generally drawn a little downwards and backwards by the muscles.

2. *Fracture of rim of Glenoid Cavity of Scapula.*—This sometimes happens in loaded camels which have done " the splits " on slippery ground. The fractured pieces are on the external side and may be quite small, but the condition causes incurable shoulder-lameness and muscular atrophy, and after the acute symptoms have passed, one can hear a " crack " in the joint when the camel is walked.

3. *Rheumatism of the Shoulder.*—This is an important disease of camels, about which there is much yet to be learned ; yet the cause is almost certainly rheumatic. There are three circumstances which predispose to it, viz. : grazing on certain species of plants or trees, working plains camels in hilly country, and changes of seasons. In India the almost universal opinion of camelmen is that the disease is brought on by grazing on the fresh young shoots and leaves of the Shisham tree in the spring ; and my own observations tend to confirm that this is a predisposing influence. Yet in Somaliland the disease occurs and there are no Shisham trees. I believe also that camels used to drinking briny water, or used to grazing on the alkaline salsolaceous plants found in certain deserts, are liable to this disease when they come on to fresh water and acid grazing.

The disease occurs suddenly and is characterised by great stiffness

of both shoulder-joints without any external swelling. The camel, if made to barrack, will resist strongly, and on touching the ground with his knee, may probably fall right over, to avoid the pain of bending the shoulder-joint. As the acute stage passes off, the animal becomes able to barrack, but he does so slowly, sliding his knees forward on the ground so as to avoid flexion of the shoulder, and settling down to the ground slowly. Novices might easily think his pain was in the loins. The lameness tends to wear off with exercise; the stride is shortened, and, in riding camels, the head is carried low. The rheumatism sometimes permanently lames the camel, but I think this is due to camelmen not resting the animal until he is sound, because they are inclined to think that, because the lameness wears off with exercise, exercise must be good for the disease. When complete rest is given from the first onset until freedom from stiffness or lameness is obtained, many camels recover. The prognosis is the difficult part, and must be based on the length of time the camel has suffered, and the degree of stiffness or lameness. Old cases, when met with on active service, are best worked on, if slight. In treatment, complete rest from work, and access to salsolaceous plants are the chief things; sodium bicarbonate may be given daily, followed by a spell of arsenic treatment. Firing does no good. In this, as in many other lamenesses, "complete rest" is not obtained if the camel has to cover many miles daily on the grazing ground to pick up a living. On the first onset, 2 lb. Epsom salts may be given with advantage. The lame camel should not be tied down in the sitting position, and should be rugged up at night.

4. *Sprain of the Tendons about the Shoulder-joint.*—Causes: False steps in rough country, or slipping on a muddy surface. Symptoms: lameness with a short step and a tied-in gait, and an endeavour to prevent flexing the shoulder when barracking. Treatment, as in horses. This is, perhaps, the common camel lameness, and its cure chiefly depends on the animal getting, from the first onset, complete rest until he can run without any suspicion of stiffness. The recovery will take place quicker, therefore, if the country can produce some sort of forage which can be substituted for grazing, thus preventing the necessity of the animal walking about all day.

5. *Dislocation of the Shoulder-joint.*—The camel is the only domesticated animal in which this injury is not an unusual one. It occurs from the same causes as "sprain." The huge bulging made by the head of the humerus cannot be mistaken. I have met with several cases, but always under circumstances in which reduction under chloroform could not be attempted.

6. *Abscess of Prepectoral Lymph-glands.*—The prepectoral glands of the camel form two groups, one easily palpable at the base of

the neck, the other just inside the first rib. Abscess in the prepectoral gland is quite a common disease, and its exact cause is unknown ; it may be botriomycotic in many cases. There is considerable fever and lameness until the pus is evacuated, but the local treatment is on the usual lines ; I wish to deny absolutely the statement which has been made that you must never foment a camel's skin or something dreadful will happen. It is not true. A dose of 2 lb. Epsom salts may be given in this disease with advantage.

7. *Fractured Humerus.*—Sometimes occurs in riding-camels suddenly from (apparently) a false step. Incurable.

8. *Brushing between Foreleg and Body.*—This is a common disease, and there are three distinct varieties.

The first variety is due to friction of the inside of the forearm against the side of the pedestal. Pathologically, the two lesions exactly resemble the human " corn " ; although sometimes friction is so severe that the epidermis is worn through before it has time to hypertrophy, and then there is hæmorrhage at every step. I have seen the epidermis so thickened in this disease as to resemble wood in its consistency. The lesions make the camel take a short quick step, and he will take on a sort of sidelong gait to shift his body away from the tender side. The larger the lesion grows, the worse the friction is, and eventually the camel actually goes lame. The chief cause of this form of brushing is in the conformation, particularly turned-out toes and a narrow chest ; it is also brought on by overloading young camels, by working plains camels in hilly country, by steep descents under a load, and by favouring a lame limb and so shifting the weight of the body too much to one side. It is impossible to cure advanced cases ; in slight cases the swellings can sometimes be reduced by complete rest on full rations (so that the camel has not to go out grazing) and by the use of blue ointment ; but one is rather helpless against this disease.

The second variety is caused by the squeezing in the axilla, at every step, of a fold of thickened skin. This fold is caused by working the camel when he has the skin of the axilla thickened by ticks, mange or mange-dressings. It is a bad form of brushing, and causes much pain, and often hæmorrhage in the axilla. Treatment involves complete rest and surgical removal of the fold of skin by a careful operation, and that throws the camel out of work for a long time.

The third variety of brushing consists in friction between the elbow-pad and the skin over the chest, some distance above the pedestal. It is less serious than the other forms because the skin over the chest is loose and " gives " under pressure of the elbow-pad, and so does not readily become sore. If the camel is rested before soreness occurs, the skin may thicken sufficiently to protect him in this form of brushing.

9. *Fracture of Radius.*—I have seen deferred fracture of this bone in camels.

10. *Chronic Sprain of Knee and Fetlock-joints* in young camels. The damage is done during the first year of life, and is caused by the young camel having to follow his dam over stony, hilly country whilst his joints are immature and unfit for it. The veterinary surgeon on active service will only meet with the resulting deformities in the adult: they are excessive knock-knees and inward-bending fetlocks, sometimes with compensatory exostoses. Many camels so deformed can do packwork without any lameness.

11. *Fracture of Metacarpus.*—I have had very good results in treating simple fractures of the metacarpus with the help of plaster of paris and of iron splints. The natural sitting position of the camel enables him to rest this bone completely. It takes about seven weeks before he can bear his weight on the leg, and three months before he can work at the walk.

12. *Exostoses of Metacarpus.*—These are from camel-bites and blows. If lameness is present, treat as in equine practice.

13. *Sprain of Flexor Tendons.*—This is only common in fast riding-camels and is treated as in equine practice.

14. *Rheumatism of Flexor Tendons* takes the form of synovitis of sesamoideal sheath; treat by bandaging with dry flannel puttees, and medicinally as for shoulder rheumatism.

15. *Brushing (Fetlock or Foot).*—This is only serious in riding camels. Either from excessively large feet or from the forelegs being too close together, brushing may occur on the fetlock or on the foot about 2 inches from the ground. Riding camels which develop this habit are unsafe to ride.

16. *Open Sesamoideal Sheath.*—The sheath of the flexor tendons is sometimes opened by bites of musth camels. The condition is too serious to be worth treating on active service.

17. *Fracture of Os Suffraginis.*—The camel has, of course, two digits in the foot, and it was only one bone which was fractured in the cases I have seen. The baggage camel is a good subject for the treatment of such a fracture, although sometimes an exostosis forms which interferes with the flexor tendons and causes permanent lameness.

18. *Foot Soreness and Bruised Sole.*—The structure of the sole from below upwards is made up of:—

1. Horny sole, varying in thickness in different breeds, from ¼ to ½ inch.
2. Sensitive sole, or secreting membrane.
3. Two yellow elastic pads, one for each digit.
4. The tendons and small sesamoideal sheath.

The horny sole may wear thin, particularly in camels brought from sandy deserts and put to work in stony country ; the feet of the desert camel are usually softer than those of the hill camel. The sensitive sole becomes inflamed and there is some swelling of the foot. A similar condition may arise from cracking of the horny sole after a march over wet and unsuitable going. Treatment is rest, application of Stockholm tar, and a leather boot to protect the foot until the horn has grown again. Bruised sole is caused by treading on stones when loaded, especially in camels not used to stony country. The foot swells, there is lameness, and on testing the foot a tender place will be found in the sole. Very often there is an exudation from the sensitive sole and it becomes palpable by bulging and fluctuation. A knife should then be passed, at the bulging point, through the horny sole and no deeper, and the fluid and any necrosed soft tissues can be pressed out. The elasticity of the foot prevents the re-accumulation of fluid and the only after treatment necessary is to dab on Stockholm tar.

19. *Punctured Wounds of the Foot.*—In the camel, such punctures are generally made by thorns. In India, the Garinda thorn is the chief culprit ; in Somaliland, it is generally one of the long Acacia thorns. I have nothing particular to say about treatment, which is on general lines. The puncture is troublesome when one of the elastic cushions is punctured ; and often incurable if the tendon-sheath is reached by the thorn, the camel being rather subject to septicæmia when the sesamoideal sheath becomes septic.

20. *Whitlow.*—Each digit of the foot is capped in front by a small claw, under which is a small area of sensitive laminæ. Whitlow is suppurative inflammation of this tissue under the claw. In camels, if there is any difficulty in draining or evacuating pus, it is best to remove the claw and treat the parts below directly.

Surgical Diseases of Hind Limb.

These include :—

1. Fractured pelvis (very rare).
2. Dislocation of hip joint with fracture of articular head of femur.
3. Sprain of hip-joint.
4. Abscess of superficial inguinal glands.
5. Luxation of patella.
6. Sprain of stifle-joint (?)
7. Fractured tibia.
8. Sprain of flexor metatarsi.
9. Hyæna bites.
10. Sprain of gastro enemius at its insertion.
11. Brushing at point of hock.

12. Luxation of tendon of Achilles.
13. Arthritis of hock-joint.
14. "False spavin."

The diseases of the parts below the hock closely resemble those in the fore-limb.

1. *Fracture of Pelvis.*—I have seen two cases. One was a fracture of the ilium and suppurating, and the owner was just starting from Nushki, in Baluchistan, to Meshed (Persia), taking the camel with him unloaded; this gives some idea of the endurance of pain that camels possess. The other case was a fractured ischium; the tuber ischii had disappeared from its usual position, and a large bony swelling developed near the hip-joint; this case recovered completely, becoming quite free from lameness or stiffness in all its movements in spite of the shortened quarter. The camel should be a good subject for treatment of pelvic fractures.

2. *Dislocation of Hip-joint with Fracture of Articular Head of Femur.*—Not an uncommon occurrence and happens when the hind-legs slip apart on muddy ground. In my experience, it has always been in camels under six years old, in which the articular head of the femur is not yet firmly united, having a separate centre of ossification. The articular head breaks off, the ligamentum teres ruptures, and the articular head is carried outside the cotyloid cavity; the fractured surface on the femur is then brought into contact with the cotyloid cavity. Diagnosis is easy if one knows what happens in these cases; the immobility, the inability to bear weight, and the great swelling over the region of the joint are characteristic. The condition is incurable, but nature makes great efforts in these cases, and I have seen camels working which were subsequently found to have the articular head joined to the ischium by a huge exostosis, and a sort of improvised hip-joint, the femur having worn smooth in the cotyloid cavity. Needless to say, the camels were in pain, especially when barracked, and no European would use a camel so affected.

3. *Sprain of Hip-joint.*—This is a sprain of the ligamentum teres. Symptoms: Lameness; a shortened stride of the lame limb, which is brought forward with difficulty; a sidelong gait, the quarters being inclined away from the lame side; no swelling; a great unwillingness to lower the hindquarters when being barracked, particularly during the stage when the hip-joint is being flexed, the weight of the body being thrown on to the sound side. The only treatment, practically, is rest from the first onset until quite free from lameness; if possible, the forage should be brought to the camel so that he will not have to go out and graze; and the camel must never be tied down. Cases rested from the onset generally recover unless the sprain is very

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severe ; but by working them before they are fit, very many are lamed permanently, and show atrophy of the quarter.

4. *Abscess of Superficial Inguinal Glands.*—Not uncommon, and is curable by treatment on the usual lines.

5. *Luxation of the Patella.*—None of the chronic cases I have met with proved curable ; the extreme flexion of the stifle in the natural sitting position makes permanent recovery almost impossible.

6. *Sprain of the Stifle-joint* (?).—Camelmen are fond of diagnosing stifle-lameness, but, in my opinion, it is very rare, and most of the cases fired by them over the stifle were lame from sprain of the hip-joint.

7. *Fractured Tibia.*—Transverse fractures are not worth treatment on active service. Deferred longitudinal fractures, however, have been met with, as are so often seen in equine practice, without displacement, and when this is diagnosed, the camel should be fed and watered where he stands and, if possible, not moved from the spot for three weeks ; I have had one or two good recoveries, and found that the patient would not attempt to sit down until about fourteen days after the injury, when the fissures have begun to unite.

8. *Sprain of Flexor Metatarsi.*—This lameness is more common in camels than in horses, but the symptoms are identical. It is done by slipping on muddy surfaces, the foot sliding out behind the animal. Treatment : Complete rest and blistering, but they are very obstinate cases.

9. *Hyæna bites.*—The hyæna often attacks the hind parts of camels tied down in the sitting-position and so unable to defend themselves. The favourite points of attack are the crural muscles above the stifle, and the gastrocnemius. It is marvellous how good the recoveries are from these bites, even when the camel is nearly hamstrung by them.

10. *Sprain of Gastrocnemius Tendon at its Insertion.*—There is a slight painful enlargement at the point of the hock ; lameness may be absent, but the camel cannot rest when barracked, because of the stretching of the inflamed fibres in that position. He remains workable under light loads but if complete cure is desired, nothing but a long rest (and never tied down at night) will do it.

11. *Brushing at the Point of the Hock.*—Sometimes seen in riding-camels. The point of one hock rubs against the point of the other, and a painful swelling, often " callous " like a human corn, is formed on each leg. Like so many of the diseases of the hind-leg of camels, the condition is not permanently curable.

12. *Luxation of Tendon of Achilles.*—This common disease is known in India as " Ragl," and in Somaliland as " Sivr." It never causes lameness, and is only perceptible when the camel is sitting. It is

brought on by the habit some camels have of sitting on their hocks and not on their feet; and by want of tone in the muscles after some sickness, particularly when the animal is made to lift heavy loads before he is fit. The normal sitting position obliterates the angle between tibia and metatarsus; and, as a result of this extreme flexion of the hock-joint, the tendon of Achilles has to pass over a pulley formed by the lower end of the tibia; and at this weak point nature has not provided any great support to the tendon, and it is liable to slip outwards off the convexity; this is the condition I have called "luxation."

There are all degrees of this "luxation"; some camels have tendons which are easily pushed out of place, but never slip out of their own accord, and these cases are practically sound. When, however, the tendon slips outward off the end of the tibia when the camel is sitting, it is a serious unsoundness. The camel may be able to rise under a load with an effort which brings the tendon back into its place with a snap, but every such effort aggravates the luxation. Eventually, if only one hock is affected, the leg becomes devoid of lifting power and the camel can only rise under a very light load; whilst, if both hocks are involved, he may at last be unable to rise off the ground at all.

Treatment: Slight cases due to want of tone of the muscles in debilitated animals sometimes recover by rest and a proper full diet, which remove the cause. Old-standing or severe cases often prove incurable; but a deep firing along the inside edge of the tendon where it normally lies over the end of the tibia (and taking care not to damage the posterior tibial artery) may occasionally succeed in forming adhesions which give the tendon support.

13. *Arthritis of Hock-joint.*—Sometimes a camel develops acute arthritis of a hock joint without any obvious cause. Most of the cases I have seen developed during the night, nothing being noticed wrong the previous evening; and generally in wet weather. I think there is good reason for suspecting the disease to be a form of rheumatism, although, of course, it would be easy for a careless camelman to damage the hock-joint by a blow with a stick when the animal is barracked, because, in that position, the joint is decidedly exposed owing to its extreme flexion. The affected camel, if made to sit, endeavours to straighten his hock by rolling on to his side; and a tender swelling on each side of the Achilles tendon just above the point of the hock is found when the joint is flexed. The camel takes a longer stride with the lame leg than with the sound one. If the camel receives complete rest (involving feeding him where he stands) from the first onset, and is not tied down, the disease may not progress beyond the stage of synovitis, and a slow but sure recovery can be

expected. He must not be worked until he has been able to run sound for several days at least. If worked or exercised too soon, the disease develops into an ulcerative arthritis in which the articular cartilage gets eaten away and exostoses form about the joint. This chronic arthritis is incurable and is easily recognised by the diffuse bony enlargement of the joint and the obvious hock-lameness.

During the synovitis stage, the camel should be rugged up, and given 2 lb. of Mag: Sulph. I have not yet met with this disease outside India.

14. *False Spavin.*—Enlargement of the inner and upper end of the metatarsus results from blows—sometimes from sprains of ligaments. Lameness is only temporary, but the enlargement may be permanent. There is no disease of the camel that I have yet seen bearing any real resemblance to the true " spavin " of horses.

Conclusion.—The foregoing paper is admittedly only a superficial account of the camel's diseases, and has been written from memory only. Veterinary surgeons must therefore deal gently with any inaccuracies which may have crept in; the paper has been written in the back-country of Somaliland, and all my notes and records are at home. I hope that those whose experience with camels brings new facts to light will ventilate them in the VETERINARY JOURNAL, thereby increasing our knowledge of camel diseases. No attempt has been made in this paper to deal with anything but the male working camel from the point of view of the veterinary officer on active service.

Translation.

ON THE USE OF A SO-CALLED METALLIC DRESSING.

By VETERINARY-MAJOR CHAUSSÉE.
Of the 111th French Regiment of Heavy Artillery.

Veterinary surgeons serving at the Front have noted the difficulty, not to say the impossibility, of maintaining dressings in place on the members of animals by the aid of simple linen bandages. This difficulty is chiefly experienced in winter, when the units whose efficiency depends on us are bivouacked on ground completely sodden by rain and transformed into veritable quagmires. In these conditions the linen bandage is insufficient; it is immediately soiled, tears or rots quickly, and needs replacing daily. Even if we have plenty of material, the daily renewal of dressings is not always possible.

To remedy this state of things, I suggest the use of a metallic dressing, easy of application, not costly, and within reach of all. It consists in the use of simple wire-netting of as narrow a mesh

as possible—for example, that which is used to make bird-cages. Its use is quite simple, and the shape to be given to the dressing varies with the region on which it is to be applied, and is left to the appreciation and ingenuity of the practitioner.

For example : Dressing of injuries at the level of the prominences of the breast bone—use a band cut out of the wire-netting of the width of three fingers, and the length of which will allow it to go beyond the prominences to right and left. A wire thread passed into the upper meshes shaping its edge will unite at the extremities of the band of netting with a wire thread passing similarly in the lower meshes. Twist these two threads, which are joined together, with pincers, once the bandage is put in place with those of the other extremity of the band. Make this wire thread immobile by clinching it tightly and embedding it in a groove of the wall made with the help of a rasp or pincers ; do not stitch it, but only bend it over.

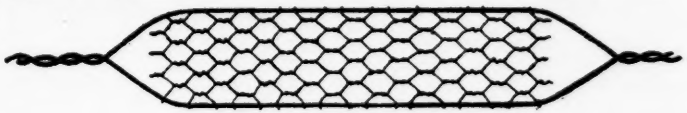

FIG. 1.

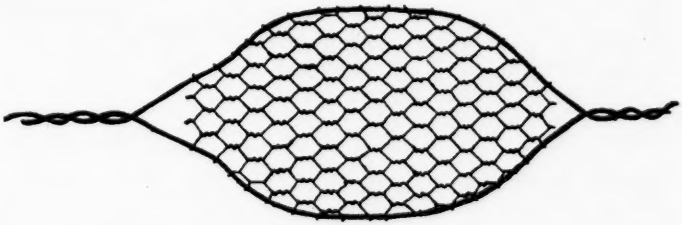

FIG. 2.

The procedure may be carried out quite well without grooving and without pincers by simple clasping of the wire thread to hold this dressing in its place for several days ; it suffices if it is examined every morning at visiting time and clasped afresh if occasion requires.

Dressings for Suppurations of the Coronet.—Cut out an oval piece of netting of the required size. The same wire threads previously described, fastened in the same way at the extremities and clasped together with those at the other end, at the point of the wall diametrically opposed to the wound.

Dressing for Necrosis.—Cut out of the netting a rectangular bandage whose dimensions will permit of making a complete surrounding of the member to be treated and reach above the fetlock. Some wire threads as in the preceding dressings above and below the

network. Fix this at the bottom on the toe of the shoe, attach loosely at the top, which is effected by simple closure of the netting.

I have even used the netting in the treatment of wounds of the joints and in broken knees. As I have previously stated, their form and their making are left to the initiative of the veterinary surgeon. They have the advantage of keeping their position for a very long time, and allow of the horse displacing them without risk of soiling the wound and without fear of loss of the bandage.

Metallic bandages are within reach of all. The Engineer Service furnishes netting to the units. The ends of the wire threads, which are cut when making the bandage, should be flattened well, and then there is no fear of wounds being caused to the opposite member to that

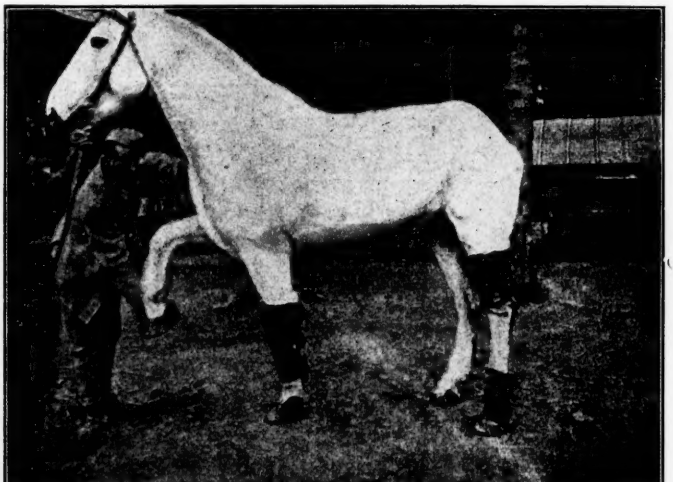

FIG. 3.—Horse with dressing fixed by wire netting.

being treated. The only inconvenience to be ascribed to them is that they necessitate a certain amount of stuffing—that is to say, a considerable quantity of wadding, especially in the case of necrosis or sore heels or other similar conditions. But this difficulty is easily solved. One can replace the wadding for stuffing by the felting used to line the sockets in the boxes for projectiles of large calibre. This felt is thrown away by the shooting batteries when the cases are empty. This wadding of excellent thickness is of great service in the preparation of certain dressings.

By calling attention to the use which can be made of wire-netting as a means of applying wadded dressings, I hope to render a service

to veterinary surgeons who, serving at the Front, have not at their disposition the material which their more favoured colleagues at the rear possess.

The photographs explain the uses of the netting in different regions. Easy of application, simple in their construction, they are very solid, very resistant, and cheap in price.—*Revue Gén. de Méd. Vétérinaire.*

G. M.

Reviews.

TEXT-BOOK OF MEAT HYGIENE, WITH SPECIAL CONSIDERATION OF ANTE-MORTEM AND POST-MORTEM INSPECTION OF FOOD-PRODUCING ANIMALS. By R. Edelmann, Ph.D., and John R. Mohler, A.M., V.M.D., and Adolph Eichorn, D.V.S. Third revised English edition and authorised translation revised for America. Pp. 439, 161 illustrations, five coloured plates; price 21s. net. Publishers: Messrs. J. and A. Churchill, 7, Great Marlborough Street, London, W.

Although revised from the point of view of the rules and regulations governing meat inspection of the Bureau of Animal Industry in America, this book contains valuable and quite modern information for all English-speaking meat inspectors. It is well arranged, and in a series of fourteen chapters deals adequately with meat from its source of origin to its stage of consumption, and the care and supervision that must be exercised to ensure a wholesome and good supply. The importance of ante-mortem inspection of animals no less than that of post-mortem inspection of carcases receives due consideration, and the preparation and inspection of meat food products, which has always been a matter of difficulty to inspectors, has a special chapter to itself. The volume has been brought well up to date with regard to the pathology of various diseases which afflict food-producing animals. Meat poisonings, the hygiene of meat itself, and the cleanliness and construction of abattoirs and stockyards are comprised in a full knowledge of the science of meat inspection, and here we find much that is apt and interesting on the subjects. If meat inspection as an ordinary every-day procedure in all large towns and cities advanced as much as the knowledge of its technique progresses, we might be satisfied with the position, but there is a huge kingdom to bring under supervision before the science can produce its best effects. Wherever meat inspection is carried out regularly, this book for reference and study will be very welcome, and it may accomplish some pioneer work in calling attention to the necessity of the work as a safeguard to the health and hygiene of all progressive communities.

G. M.

Department of Agriculture and Technical Instruction for Ireland—SIXTEENTH ANNUAL GENERAL REPORT OF THE DEPARTMENT, 1915–1916. Published by His Majesty's Stationery Office, Dublin. Price 1s. net.

The report is a record of lively activity in matters that conduce to healthy and remunerative progress in agriculture. £10,000 was provided for horse-breeding under the Department's scheme; the registration of dairy cattle, the formation of cow-testing associations,

the improvement in the breeds of swine, sheep, and poultry all occupied the earnest consideration of the Department. The importance of increasing the food supply was constantly put before the agriculturist by a wide issue of posters and special leaflets, and the instructors and overseers paid particular attention to the increase of food products. The Veterinary Division conducted research and advanced knowledge in connection with the following diseases: Braxy, louping-ill, pyæmia in lambs, contagious abortion and tuberculosis in cattle and diseases of poultry.

The report is altogether an admirable document and we think we can see in it one factor, and that by no means a trifling one, contributing to the marked and continued prosperity of Ireland as an agricultural country. Every one of its pages is instinct with life and breathes the spirit of true progress. G. M.

Obituary.

LIEUTENANT HOWARD S. TINDALL.

Members of the profession will hear with deep regret of the death in action in Flanders of Lieutenant Howard S. Tindall, the junior partner in the well-known Veterinary publishing firm of Baillière, Tindall, and Cox, whose name has been so closely associated with the Veterinary world from the student days when we purchased our first veterinary text-book. Born in 1884, Mr. Tindall was educated at Haileybury and Pembroke College, Cambridge, graduating B.A. with honours in 1907.

Shortly after the war started he joined the Inns of Court O.T.C., and obtained a Commission in the Royal Berkshire Regiment, holding the position of Brigade Bombing Officer, and then that of Brigade Signalling Officer. His quiet, genuine manner had gained him many friends, by whom his death is much deplored, and our deepest sympathy is extended to his father and brother.

NOTICES.

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière-Rand, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

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